Appendix A

R-Value/U-Value Average Worksheet

COMPONENT DESCRIPTION	R-VALUE	U-VALUE (1÷R-VALUE)	AREA	UA (U-VALUE x AREA)
			TOTAL AREA=	TOTAL UA=

TOTAL AREA ÷ TOTAL UA = WEIGHTED AVERAGE R-VALUE

TOTAL AREA ÷ TOTAL UA = WEIGHTED AVERAGE U-VALUE

If you wish, make extra copies of this page. A similar worksheet can be found in the REScheck support materials from www.energycodes.gov (see Appendix B).

This worksheet can help you calculate the overall R-value or U-factor of groups of components that have different thermal performance. You can use it to calculate the average R-value of two ceiling, wall or floor areas that have different insulation levels; or to get the average U-factor of two different types of windows or doors.

You may find this especially useful if you are using a prescriptive compliance method for a house or an addition. This is the only way that you can get a performance "trade off" using the prescriptive method, although you can only trade off performance within each component type.

The examples on the following page show how to calculate an overall R-value for a ceiling with an uninsulated attic hatch; and the overall U-factor for a group of windows of U-0.36 and a patio door of U-0.42.

R-Value/U-Value Average Worksheet

COMPONENT DESCRIPTION	R-VALUE	U-VALUE (1÷R-VALUE)	AREA	UA (U-VALUE x AREA)
attic flat	*38*	*0.026*	*932*	*24.5*
hatch	*1*	*1*	*4*	*4*
			TOTAL AREA= *936*	TOTAL UA= *28.5*

This example shows the effect of a single uninsulated attic hatch on the R-value of a well-insulated ceiling. R-38 is degraded to R-33!

936 (TOTAL AREA) ÷ *28.5* (TOTAL UA) = *32.8* (WEIGHTED AVERAGE R-VALUE)

_____ (TOTAL AREA) ÷ _____ (TOTAL UA) = _____ (WEIGHTED AVERAGE U-VALUE)

COMPONENT DESCRIPTION	R-VALUE	U-VALUE (1÷R-VALUE)	AREA	UA (U-VALUE x AREA)
windows	—	*0.36*	*239*	*86*
patio door	—	*0.42*	*40*	*16.8*
			TOTAL AREA= *279*	TOTAL UA= *102.8*

In this example, the patio door has a small effect on the overall window U-value.

_____ (TOTAL AREA) ÷ _____ (TOTAL UA) = _____ (WEIGHTED AVERAGE R-VALUE)

102.8 (TOTAL AREA) ÷ *279* (TOTAL UA) = *.37* (WEIGHTED AVERAGE U-VALUE)